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036140/US - 475387-00020 PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s)

Guillermo J. Tearney et al.

Serial No.

: 10/765,430

Filed

January 26, 2004

Entitled

SYSTEM AND METHOD FOR IDENTIFYING TISSUE USING

LOW-COHERENCE INTERFEROMETRY

Group Art Unit

3737

Examiner

To be assigned

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 I hereby certify that this document is being sent via First Class U. S. mail addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 on this day of August 16, 2005.

(Signature)

Dear Sir:

Pursuant to 37 C.F.R. §§ 1.56 and 1.97(b), applicants bring to the attention of the Examiner the documents listed on the attached Form PTO 1449, and respectfully request that the listed documents be considered by the Examiner and made of record in the above-captioned application. Copies of the United States patent references listed on the Form PTO-1449 are not enclosed, but the PCT, foreign and non-patent references are enclosed.

This submission does not represent that a search has been made or that no better art exists and does not constitute an admission that the listed documents are material or constitute "prior art." If the Examiner applies the documents as prior art against any claim in the application and applicants determine that the cited documents do not constitute "prior art" under

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United States law, applicants reserve the right to present to the Office the relevant facts and law

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This submission is being filed before any action by the U.S. Patent and

Trademark Office on the merits. Therefore, applicants do not believe that any fee is due in

connection with the submission of this paper. However, if any fee is due, or if any overpayment

has been made, the Commissioner is authorized to charge any such fee or credit any

overpayment, to our Deposit Account No. 50-2054.

Respectfully submitted,

DORSEY & WHITNEY, LLP

Gary Abelev

PTO Reg. No. 40,479

Attorneys for Applicants

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	January 26,	2004	3737
- -			
	Bouma, Brett et al., "Power-Efficient Nonreciprocal Fiber-Optic Catheter for Optical Coherence Tomogra 533, April 1999		
	Brinkmeyer, E. et al., "Efficient Algorithm for Non-l Data", <u>Electronics Letters</u> , Vol. 28, page 693, March		erpolation of Sampled
	Brinkmeyer, E. et al., "High-Resolution OCDR in Di Letters, Vol. 26, pages 413-414, March 1990	ispersive Wave	-Guides", Electronics
	Chinn, S.R. et al., "Optical Coherence Tomography Source", Optics Letters, Vol. 22, pages 340-342, Ma		ncy-Tunable Optical
:	Danielson, B.L. et al., "Absolute Optical Ranging Us Applied Optics, Vol. 30, page 2975, July 1991	sing Low Coher	rence Interferometry",
	Dorrer, C. et al., "Spectral Resolution and Sampling Interferometry", <u>Journal of the Optical Society of An</u> 1795-1802, October 2000		
	Dudley, J.M. et al., "Cross-Correlation Frequency Re Broadband Continuum Generation in Photonic Cryst Optics Express, Vol. 10, page 1215, October 2002	al Fiber: Ŝimul	ations and Experiments",
	Eickhoff, W. et al., "Optical Frequency-Domain Refl Applied Physics Letters, Vol. 39, pages 693-695, 198		ingle-Mode Fiber",
	Fercher, Adolf "Optical Coherence Tomography", Jo 157-173, April 1996	ournal of Biome	edical Optics, Vol. 1, pages
	Ferreira, L.A. et al., "Polarization-Insensitive Fiberon Communications, Vol. 114, pages 386-392, February		nt Interferometry", Optics
	Fujii, Yohji, "High-Isolation Polarization-Independent Lightwave Technology, Vol. 9, pages 1239-1243, Oc.		ulator", <u>Journal of</u>
	Glance, B., "Polarization Independent Coherent Opti Technology, Vol. LT-5, page 274, February 1987	cal Receiver",	Journal of Lightwave

Examiner Date Considered

^{*} Examiner: Initial citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Page 3 of 6 Form PTO-1449 U.S. Department of Commerce Atty. Docket No. Serial No. (REV. 2-82) Patent and Trademark Office 036140/US - 475387-00020 10/765,430 INFORMATION DISCLOSURE STATEMENT Applicant(s) **BY APPLICANT** Guillermo J. Tearney (Use several sheets if necessary) Filing Date Group January 26, 2004 3737

	Glombitza, U., "Coherent Frequency-Domain Reflectometry for Characterization of Single-
	Mode Integrated-Optical Wave-Guides", Journal of Lightwave Technology, Vol. 11, pages
	1377-1384, August 1993
	Golubovic, B. et al., "Optical Frequency-Domain Reflectometry Using Rapid Wavelength
	Tuning of a Cr4+: Forsterite Laser", Optics Letters, Vol. 11, pages 1704-1706, November 1997
•	, vol. 17, pages 170 1 1700, 100 most 1997
	Haberland, U. H. P. et al., "Chirp Optical Coherence Tomography of Layered Scattering
	Media", Journal of Biomedical Optics, Vol. 3, pages 259-266, July 1998
	Hammer, Daniel X. et al., "Spectrally Resolved White-Light Interferometry for Measurement
	of Ocular Dispersion", Journal of the Optical Society of America A-Optics Image Science and
	<u>Vision</u> , Vol. 16, pages 2092-2102, September 1999
•	Harvey, K. C. et al., "External-Cavity Diode-Laser Using a Grazing-Incidence Diffraction
	Grating", Optics Letters, Vol. 16, pages 910-912, June 1991
	Hausler, Gerd et al., " 'Coherence Radar' and 'Spectral Radar' New Tools for Dermatological
	Diagnosis", Journal of Biomedical Optics, Vol., 3, pages 21-31, January 1998
	Hee, Michael R. et al., "Polarization-Sensitive Low-Coherence Reflectometer for
	Birefringence Characterization and Ranging", Journal of the Optical Society of America B
	(Optical Physics), Vol. 9, page 903-908, June 1992
	Hotate Kazuo et al., "Optical Coherence Domain Reflectometry by Synthesis of Coherence
	Function", Journal of Lightwave Technology, Vol. 11, pages 1701-1710, October 1993
	, , , , , , , , , , , , , , , , , , ,
	Inoue, Kyo et al., "Nearly Degenerate 4-Wave-Mixing in a Traveling-Wave Semiconductor-
	Laser Amplifier", Applied Physics Letters, Vol. 51, pages 1051-1053, 1987
	Ivanov, A. P. et al., "New Method for High-Range Resolution Measurements of Light
	Scattering in Optically Dense Inhomogeneous Media", Optics Letters, Vol. 1, pages 226-228,
	December 1977
	Ivanov, A. P. et al., "Interferometric Study of the Spatial Structure of a Light-Scattering
	Medium", Journal of Applied Spectroscopy, Vol. 28, pages 518-525, 1978
	Kazovsky, L. G. et al., "Heterodyne Detection Through Rain, Snow, and Turbid Media:
1	Effective Receiver Size at Optical Through Millimeter Wavelenghths", Applied Optics, Vol.
	Effective received Size at Spitear Throagh Minimister Wavelenghams, Inpplied Spites, Vol.

Examiner	Date Considered

^{*} Examiner: Initial citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Page 4 of 6 Form PTO-1449 U.S. Department of Commerce Atty. Docket No. Serial No. (REV. 2-82) Patent and Trademark Office 036140/US - 475387-00020 10/765,430 INFORMATION DISCLOSURE STATEMENT Applicant(s) BY APPLICANT Guillermo J. Tearney (Use several sheets if necessary) Filing Date Group January 26, 2004 3737 Kersey, A. D. et al., "Adaptive Polarization Diversity Receiver Configuration for Coherent Optical Fiber Communications", Electronics Letters, Vol. 25, pages 275-277, February 1989 Kohlhaas, Andreas et al., "High-Resolution OCDR for Testing Integrated-Optical Waveguides: Dispersion-Corrupted Experimental Data Corrected by a Numerical Algorithm", Journal of Lightwave Technology, Vol. 9, pages 1493-1502, November 1991 Larkin, Kieran G., "Efficient Nonlinear Algorithm for Envelope Detection in White Light Interferometry", Journal of the Optical Society of America A-Optics Image Science and Vision, Vol. 13, pages 832-843, April 1996 Leitgeb, R. et al., "Spectral measurement of Absorption by Spectroscopic Frequency-Domain Optical Coherence Tomography", Optics Letters, Vol. 25, pages 820-822, June 2000 Lexer, F. et al., "Wavelength-Tuning Interferometry of Intraocular Distances", Applied Optics, Vol. 36, pages 6548-6553, September 1997 Mitsui, Takahisa, "Dynamic Range of Optical Reflectometry with Spectral Interferometry", Japanese Journal of Applied Physics Part 1-Regular Papers Short Notes & Review Papers, Vol. 38, pages 6133-6137, 1999 Naganuma, Kazunori et al., "Group-Delay Measurement Using the Fourier-Transform of an Interferometric Cross-Correlation Generated by White Light", Optics Letters, Vol. 15, pages 393-395, April 1990 Okoshi, Takanori, "Polarization-State Control Schemes for Heterodyne or Homodyne Optical Fiber Communications", Journal of Lightwave Technology, Vol. LT-3, pages 1232-1237, December 1995 Passy, R. et al., "Experimental and Theoretical Investigations of Coherent OFDR with Semiconductor-Laser Sources", Journal of Lightwave Technology, Vol. 12, pages 1622-1630, September 1994 Podoleanu, Adrian G., "Unbalanced Versus Balanced Operation in an Optical Coherence Tomography System", Applied Optics, Vol. 39, pages 173-182, January 2000 Price, J. H. V. et al., "Tunable, Femtosecond Pulse Source Operating in the Range 1.06-1.33 mu m Based on an Yb3+-doped Holey Fiber Amplifier", Journal of the Optical Society of America B-Optical Physics, Vol. 19, pages 1286-1294, June 2002 Schmitt, J. M. et al, "Measurement of Optical-Properties O Biological Tissues By Low-Coherence Reflectometry" Applied Optics, Vol. 32, pages 6032-6042, October 1993

Examiner Date Considered

^{*} Examiner: Initial citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Page 5 of 6 Atty. Docket No. Form PTO-1449 U.S. Department of Commerce Serial No. (REV. 2-82) Patent and Trademark Office 036140/US - 475387-00020 10/765,430 INFORMATION DISCLOSURE STATEMENT Applicant(s) **BY APPLICANT** Guillermo J. Tearney (Use several sheets if necessary) Filing Date Group January 26, 2004 3737

	Silberberg, Y. et al., "Passive-Mode Locking of a Semiconductor Diode-Laser", Optics Letters, Vol. 9, pages 507-509, November 1984
·	Smith, L. Montgomery et al., "Absolute Displacement Measurements Using Modulation of the Spectrum of White-Light in a Michelson Interferometer", <u>Applied Optics</u> , Vol. 28, pages 3339-3342, August 1989
•	Sonnenschein, C. M. et al., "Signal-To-Noise Relationships for Coaxial Systems that Heterodyne Backscatter from Atmosphere", <u>Applied Optics</u> , Vol. 10, pages 1600-1604, July 1971
	Sorin, W. V. et al., "Measurement of Rayleigh Backscattering at 1.55 mu m with 32 mu m Spatial Resolution", IEEE Photonics Technology Letters, Vol. 4, pages 374-376, April 1992
	Sorin, W. V. et al., "A Simple Intensity Noise-Reduction Technique for Optical Low-Coherence Reflectometry", <u>IEEE Photonics Technology Letters</u> , Vol. 4, pages 1404-1406, December 1992
	Swanson, E. A. et al., "High-Speed Optical Coherence Domair Reflectometry", Optics Letters, Vol. 17, pages 151-153, January 1992
	Takada, K. et al., "High-Resolution OFDR with Incorporated Fiberoptic Frequency Encoder", IEEE Photonics Technology Letters, Vol. 4, pages 1069-1072, September 1992
	"Narrow-Band light Source with Acoustooptic Tunable Filter for Optical Low-Coherence Reflectometry", by Takada, Kazumasa et al., <u>IEEE Photonics Technology Letters</u> , Vol. 8, pages 658-660, May, 1996
	Takada, Kazumasa et al., "New Measurement System for Fault Location in Optical Wave-Guide Devices Based on an Interometric-Technique", <u>Applied Optics</u> , Vol. 26, pages 1603-1606, May 1987
	Tateda, Mitsuhiro et al., "Interferometric Method for Chromatic Dispersion Measurement in a Single-Mode Optical Fiber", <u>IEEE Journal Of Quantum Electronics</u> , Vol. 17, pages 404-407, March 1981
	Toide, M. et al., "Two-Dimensional Coherent Detection Imaging in Multiple Scattering Media Based the Directional Resolution Capability of the Optical Heterodyne Method", <u>Applied Physics B</u> (Photophysics and Laser Chemistry), Vol. B52, pages 391-394, 1991
	Trutna, W. R. et al., "Continuously Tuned External-Cavity Semiconductor-Laser", <u>Journal of Lightwave Technology</u> , Vol. 11, pages 1279-1286, August 1993

Examiner	Date Considered	

^{*} Examiner: Initial citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Applicant(s) Guillermo J. Tearney		
(Use several sheets if necessary)	Filing Date January 26, 2004	Group 3737	
Uttam, Deepak et al., "Precision Time a Frequency Modulated Continuous W Technology, Vol. 3, pages 971-977, O	Vave Ranging Technique", Journal		

	Uttam, Deepak et al., "Precision Time Domain Reflectometry in Optical Fiber Systems Using a Frequency Modulated Continuous Wave Ranging Technique", Journal of <u>Lightwave Technology</u> , Vol. 3, pages 971-977, October 1985
	Von Der Weid, J. P. et al., "On the Characterization of Optical Fiber Network Components with Optical Frequency Domain Reflectometry", Journal of <u>Lightwave Technology</u> , Vol. 15, pages 1131-1141, July 1997
•	Wysocki, P.F. et al., "Broad-Spectrum, Wavelength-Swept, Erbium-Doped Fiber Laser at 1.55-Mu-M", Optics Letters, Vol. 15, pages 879-881, August 1990
	Youngquist, Robert C. et al., "Optical Coherence-Domain Reflectometry – A New Optical Evaluation Technique", Optics Letters, Vol. 12, pages 158-160, March 1987
•	Yun, S. H. et al., "Wavelength-Swept Fiber Laser with Frequency Shifted Feedback and Resonantly Swept Intra-Cavity Acoustooptic Tunable Filter", <u>IEEE Journal of Selected Topics in Quantum Electronics</u> , Vol. 3, pages 1087-1096, August 1997
	Yun, S. H. et al., "Interrogation of Fiber Grating Sensor Arrays with a Wavelength-Swept Fiber Laser", Optics Letters, Vol. 23, pages 843-845, June 1998
	Yung, K. M., "Phase-Domain Processing of Optical Coherence Tomography Images", <u>Journal of Biomedical Optics</u> , Vol. 4, pages 125-136, January 1999
	Zhou, Xiao-Qun et al., "Extended-Range FMCW Reflectometry Using an optical Loop with a Frequency Shifter", IEEE Photonics Technology Letters, Vol. 8, pages 248-250, February 1996
	Zorabedian, Paul et al., "Tuning Fidelity of Acoustooptically Controlled External Cavity Semiconductor-Lasers", <u>Journal of Lightwave Technology</u> , Vol. 13, pages 62-66, January 1995
	Victor S. Y. Lin et al., "A Porous Silicon-Based Optical Interferometric Biosensor", <u>Science</u> , Vol. 278, pages 840-843, October 31, 1997

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Examiner	Date Considered	

^{*} Examiner: Initial citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.